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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,820	11/20/2001	Michael Pittroff	173/50483	8696

23911 7590 02/26/2003

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EXAMINER

SPITZER, ROBERT H

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 02/26/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-15

Office Action Summary

Application No.

09/988,820

Applicant(s)

PITTROFF ET AL.

Examiner

Robert H. Spitzer

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(e). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 29, 2003 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claim 7 is again rejected under 35 U.S.C. 102(e) as being clearly anticipated by the structure of Tamata et al. (6,004,377). Note, in particular the fourth embodiment, at col. 13, line 38 through col. 14, line 57, and Figs. 7 and 8.
4. Claims 1-4 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (5,785,741) in view of Sanders, Jr. et al. (4,838,904) and Li et al. (5,855,647). The claims differ from the process of Li et al. ('741) in specifying the specific glassy membrane used to separate the SF₆ and N₂, and in the specific amount of SF₆ being between 5 and 50 vol. %. Sanders, Jr. et al. ('904) show the specific membrane being recited in claim 1 for the separation of gases. Li et al. ('647) show that SF₆ can be in an admixture with N₂ up to 20 vol. % and still be separated by membrane permeation of the N₂. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to utilize the specific membrane of Sanders, Jr. et al. ('904) as the separation membrane in Li et al. ('741), as one glassy polymer membrane

would be expected to function in place of another such membrane, and to have SF₆ be present in an amount up to 20 vol. % in the feed gas mixture of Li et al. ('741), in view of the showing of Li et al. ('647) that such gas mixtures can be separated through at least one membrane permeation stage.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. ('741) in view of Sanders, Jr. et al. ('904) and Li et al. ('647), as applied in the paragraph directly above, further in view of Tamata et al. ('377). The claims differ from the process of modified Li et al. ('741) in the gas mixture source being a gas enclosure (gas insulated line). Tamata et al. ('377) show that SF₆ gas from a gas enclosure can be separated by use of a membrane permeation step. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to utilize the process of modified Li et al. ('741) to treat a gas mixture containing SF₆ obtained from a gas enclosure (gas insulating line), in view of the showing of Tamata et al. ('377).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamata et al. ('377) in view of Sanders, Jr. et al. ('904), who apply as in paragraph no. 4 above. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to utilize the specific glassy membrane of Sanders, Jr. et al. ('904) as the separation membrane in Tamata et al. ('377), as one glassy polymer membrane would be expected to function in place of another such membrane.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamata et al. ('377) in view of Li et al. ('741). The claim differs from the structure of Tamata et al. ('377) in the use of a compressor before the membrane separation stage. Li et al.

('741), at C, shows the placement of a compressor between the source of feed gas mixture and the membrane separation stage. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide the device of Tamata et al. ('377) with a compressor before the membrane separation stage(s), in view of the showing of Li et al. ('741), so that the feed gas mixture can be provided at an appropriate pressure for operation of the membrane separation stage(s), if not already at that appropriate pressure.

8. Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 is indefinite because its limitations are already in amended claim 1. Thus, claim 2 should be canceled. Claim 5 is indefinite because it recites "an insulating gas mixture of SF₆ and N₂" without any correlation to "a mixture of SF₆ and N₂, the SF₆/N₂ mixture being obtained from a gas insulated line" already recited in amended claim 1.

9. Applicant's arguments filed January 29, 2003 have been fully considered but they are not persuasive. With respect to the Tamata et al. ('377) reference, the Examiner does not agree with Applicants that it does not show a "direct" connection between the source of gas and the membrane separation stage(s) because Applicants' own specification states that "If additional impurities such as SO₂F₂, SO₂, or the like are present in the gas mixture, a purification can be carried out in advance, such as washing with water or alkali metal hydroxide solution or treatment with adsorbers" (page 3, lines 34-38) and "If a plurality of membranes are provided, a compressor disposed

upstream of each membrane" is used. Thus, in keeping with Applicants' own specification, a "direct" connection includes other separation units and/or a compressor between the gas source and the membrane separation stage(s). Thus, the Tamata et al. ('377) reference continues to clearly anticipate the structure of claim 7. As to the claims involving the use of Li et al. ('741) as the primary reference, Applicants are directed to paragraph no. 5 of the Final rejection, Paper no. 8, which also discusses the secondary references and how and why they have been used in the rejections of the above claims. With respect to the new claims which specify vol. % of the N₂ and the SF₆ in the permeate and retentate streams, respectively, those levels of purification are a direct result of the specific membrane being used in the process and the number of stages of membrane separation, and such membrane is clearly shown by the Sanders, Jr. et al. ('904) reference. Thus, the modified process of Tamata et al. ('377) with that specific glassy membrane therein would also achieve that level of purification for the same reasons that Applicants process does. Any other remarks made by Applicants and not specifically commented on by the Examiner have been considered. Applicants are reminded that their Amendment of October 23, 2002 has not been entered because Applicants did not request it be entered in their RCE.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert H. Spitzer whose telephone number is (703) 308-3794. The examiner can normally be reached on Monday-Thursday from 5:30 AM to 4:00 PM.

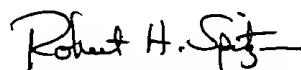
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Simmons, can be reached on (703) 308-1972. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 and for After Final communications the fax number is (703) 872-9311.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Robert H. Spitzer
February 20, 2003



Robert H. Spitzer
Primary Examiner
Art Unit 1724

February 20, 2003